UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/726,819	11/30/2000	Advait M. Mogre	00-479 1496.00052	5170

			EXAMINER
24319	7590	10/22/2003	NATNAEL, PAULOS M

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ART UNIT	PAPER NUMBER
2614	

DATE MAILED: 10/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	09/726,819	MOGRE ET AL.
	Examiner	Art Unit	
	Paulos M. Natnael	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2003* .

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-9,11-14, 16-19, 21-24* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6-9,11-14, 16-19, 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

     If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All b)☐ Some * c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____ .

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

     a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: .

U.S. Patent and Trademark Office

PTOL-326 (Rev. 04-01)   Office Action Summary   Part of Paper No. 7

DETAILED ACTION

Claim Rejections - 35 USC § 112

1.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2.   Claims **22 and 24** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claimed "bit error rate not greater that 2 errors per 10,000 bits" is new matter as it was not described in the original specification. If Applicant contends that it is not new matter, specific location, i.e., page number, line number, etc should be pointed out.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims **1-4,6-9,11-14,16-19, and 21-24** are again rejected under 35 U.S.C.

103(a) as being unpatentable over Citta et al., U.S. Pat. No. 5,583,889 in view of Yi,

U.S. Pat. No. 6,094,427.

Considering claim **1,** Citta et al. discloses the following claimed subject matter, note;

a) a formatter configured to format a plurality of data frames of a transport stream by

inserting a plurality of synchronization data to produce a block stream is met by the

Data Source which data is "arranged in a frame format wherein each frame comprises a

plurality of data segments each including a plurality of groups of interleaved data

symbols". (see Abstract)

b) an error correction encoder configured to encode said block stream to produce an

error protected block stream, is met by Reed Solomon Encoder 26, fig. 2A, "for forward

error correction coding" (col. 3, lines 34-35)

c) an interleave module configured to interleave said error protected block stream to

produce a data stream, is met by Byte Interleave 28 and symbol Interleave 30, fig. 2A;

e) an inserter configured to insert a synchronization signal into said data stream, is met

by Mapper and sync inserter 34, fig.2A.

        Except for;

d) a turbo encoder configured to encode said data stream to produce an encoded

stream,

Regarding d), Citta does not specifically disclose a **Turbo** Encoder. However, Citta discloses a Precoder and a Trellis Encoder 32, fig. 2A, which converts the 2-bit symbols into 3-bit symbols. (col. 3, lines 60-63) Furthermore, Citta discloses a convolution encoder 32b (Figs. 4 and 24A). Turbo encoders are known as concatenated convolutional coders in the art.

In that regard, Yi, for example, discloses a Turbo Encoder 502, which includes interleaver 601, encoders 602A and 602B, Puncturer #1 603A, and Puncturer #2 603B, Fig.6;

Therefore, it would have been obvious to the skilled in the art at the time the invention was made to modify the system of Citta by replacing Citta's Precoder and Trellis Encoder 32 with that of Yi's Turbo Encoder 502, in order to minimize channel noise and fading, and make the operation of the system more efficient and reliable.

Considering claim **2**, the system according to claim 1, wherein said transport stream defines two high definition television programs substantially simultaneously is implied in broadcast transport streams, i.e., they are capable of carrying two or more HDTV programs.

Considering claim **3**, the system according to claim 1, wherein said turbo encoder comprises: a first systematic encoder configured to encode said data stream to produce a first redundant stream; a bit interleave module configured to interleave said

data stream to produce a second data stream; and a second systematic encoder

configured to encode said second data stream to produce a second redundant stream.

Regarding claim 3, see rejection of claim 1 (d).

Considering claim 4, the system according to claim 3, wherein said turbo encoder

further comprises, a puncture module configured to puncture bits from said first

redundant stream and said second redundant stream to produce a redundant portion of

said encoded stream.

Regarding claim 4, see rejection of claim 1(d).

Considering claim 6, Claim 6 is a method claim of Claim 1 and, therefore, Claim 6 is

rejected for the same reasons as in Claim 1

Claims **7-9**, are method claims of Claims **2-4**, respectively and, therefore, Claims **7-9**

are rejected for the same reasons as in Claims **2-4**.

Considering claim **11**,

α b) a converter configured to convert a symbol stream into an encoded stream

comprising a plurality of symbols into an encoded stream, is met by Post Coder 48,

Fig.2A; (see col. 7, lines 10-21)

Except for;

b) a synchronization remover configured to remove a synchronization signal from said data stream;

c) a turbo decoder configured to decode said encoded stream to produce an data stream;

Regarding b), Citta doesn't specifically disclose a sync remover. Nevertheless, Examiner takes an Official Notice in that sync remover or a sync stripper are notoriously well known the art, and therefore, it would have been obvious to the skilled in the art at the time the invention was made to modify the reference of Citta by providing a well known sync remover or stripper, in order to make the operation of the system more efficient by removing undesired sync signal from the signal stream.

Regarding c), the Citta reference discloses a Reed-Solomon decoder 56 (fig.2A), as well as convolutional encoder 32b (Figs. 4 and 24A). Citta et al do not specifically disclose a Turbo decoder. The Examiner however takes an Official Notice in that Turbo encoders and decoders are well known the art and, therefore, it would have been obvious to the skilled in the art at the time the invention was made to modify the reference of Citta by replacing the Decoder of Citta with a well-known Turbo decoder, in order to obtain better time delay, minimize noise, and signal fading, thereby make the over all operation of the system more efficient.

Considering claim **12**, the system according to claim 11, wherein said symbol stream defines two high definition television programs substantially simultaneously;

Regarding claim 12, See rejection of claim 2;

Considering claim **13**, the system of claim 11, wherein said turbo decoder

comprises: a plurality of decode modules configured to decode said encoded stream to

produce said data stream;

Regarding claim 13, see rejection of claim 11 (c).

Considering claim **14,** the system according to claim 13, wherein said turbo decoder

further comprises: a depuncture module configured to depuncture a redundant portion

of said encoded stream.

Regarding claim 14,

Considering claim **16**, Claim 16 is a method claim of Claim 11 and, therefore, Claim 16

is rejected for the same reasons as in Claim 11.

Claims **17-19**, are method claims of Claims **12-14**, respectively and therefore Claims

17-19 are rejected for the same reasons as in Claims **12-14.**

Considering claim **21**, the claimed a bit-to-symbol mapper configured to map said

encoded stream to produce a symbol stream carrying a plurality of symbols each

consisting of two error protected bits and one redundant bit, , is met by Mapper and

Sync Inserter 34, fig. 2A;

Considering claim **22,** wherein said turbo encoding has a bit error rate not greater than

2 errors per 10,000 bits.

     See rejection of claim 1(d).

Considering claim **23**, a demodulator configured to demodulate a signal to produce a

said symbol stream capable wherein each of said symbols consists of two error

protected bits and one redundant bit., is met by the Tuner/Demodulator/A/D converter

40, Fig.2A;

Considering claim **24,** wherein said turbo encoding has a bit error rate not greater than

2 errors per 10,000 bits.

     See rejection of claim 1(d).

Response to Arguments

5.   Applicant's arguments filed July 25, 2003 have been fully considered but they are

not persuasive. Response follows:

Applicant's Arguments

a) Furthermore, prima facie obviousness to combine the references has not been

established for lack of clear and particular motivation.

b) Citta also appears to be silent regarding the Data Source 24, or any other block

inserting a plurality of synchronization data to the data frames of a transport stream.

c) The Office Action also appears to be confusing the frame of video pictures as taught

by Citta with the frames of a transport stream as presently claimed.

d) Claim 1 further provides an inserter (from the original claim 5) configured to insert a

sync signal into the data stream...Assuming, argunedo, that it would have been obvious

to modify Citta by replacing the trellis encoder 32 with the turbo encoder 502 of Yi, the

resulting circuit does not teach or suggest all of the elements as claimed. In particular,

the sync inserter 34 from 2A of Citta appears to operate on a stream that is already

encoded. Consequently, Citta appears to be silent that an encoder (Viterbi or Turbo)

encodes the synchronization signal inserted into the data stream.

e) Furthermore, the Office Action has not established prima facie obviousness for lack

of motivation to combine the references...Nothing in Citta appears to teach or suggest

that the receiver is somehow mobile relative to the transmitter or that there is a handoff

between two different transmitters as the receiver changes coverage areas. Citta does

not appear to face the problems solved by Yi and so motivation to fix non-existing

problems in Citta using portion of Yi would be pointless.

f) No evidence has been provided in the Office Action that adding an apparently
unnecessary block would make the receiver of Citta more efficient.

g) Citta and Yi, alone or in combination do not appear to teach or suggest a transport
stream that defines two high definition television programs substantially simultaneously
as presently claimed.

h) Citta and Yi, alone or in combination do not appear to teach or suggest a de-puncture
module.

Examiner's Response

a) see rejection of claims 1, 11 and 16.

b) Citta et al. disclose Mapper and **_Sync Inserter_** 34, fig. 2A.

c) Citta discloses that "a data source 24 provides a succession of data bytes which may,
for example comprise a compressed HDTV signal, a compressed television signal of
NTSC resolution or any other digital data signal" (col. 3, lines 25-29) "...the data bytes
from source 24, which also provides a plurality of timing signals, are applied to a Reed-
Solomon encoder 26. " (col. 3, lines 32-34) Therefore, the Citta reference clearly
teaches the data source as being or containing any digital including HDTV. Argument si
not persuasive.

d) The motivation to combine the reference is adequate. Conventionally, sync removing may be done either before or after the decoding process. It is not very clear from the Applicant's argument what is meant by "all of the elements as claimed." That is, which elements are not met is not clear from Applicant's argument. Nevertheless, although Citta does not specifically disclose a **Turbo** Encoder, as shown in the rejection of claim above, Citta discloses a Precoder and a Trellis Encoder 32, fig. 2A, which converts the 2-bit symbols into 3-bit symbols. (col. 3, lines 60-63) The Citta reference further teaches a convolution encoder 32b (Figs. 4 and 24A). Furthermore, Turbo encoders are known as concatenated convolutional coders in the art. Yi discloses a Turbo Encoder 502, which includes interleaver 601, encoders 602A and 602B, Puncturer #1 603A, and Puncturer #2 603B, Fig.6. Hence, it is appropriate as shown in the rejection above to combine the two references to reach at the claimed invention. That is, it would have been obvious to those with ordinary skill in the art at the time the invention was made to modify the system of Citta by replacing Citta's Precoder and Trellis Encoder 32 with that of Yi's Turbo Encoder 502, in order to minimize channel noise and fading, and make the operation of the system more efficient and reliable.

e) the Office Action has established prima facie obviousness and ample motivation to combine the references. Citta does not teach or suggest a mobile receiver. However, Citta teaches the various types of decoders, except the Turbo decoder that is claimed. And turbo encoders and decoders are well known the art and it would have been

obvious to those with ordinary skill in the art to modify the reference of Citta by providing the well-known Turbo decoder. The argument is therefore unpersuasive.

f) Citta may be silent on the sync remover as it is conventionally well known and, as mentioned above, may be performed in the equalizer before the decoder, as the designer chooses. Argument is considered unpersuasive.

g) Citta discloses that the data source 24 provides a succession of data bytes which may, for example, comprise a compressed HDTV signal, a compressed television signal of NTSC resolution or any other digital data signal". [emphasis added] (col. 3, lines 25-29) Argument is unpersuasive because HDTV may be digital television signal, although Citta does not use the term "transport" stream, Citta however, clearly teaches the data could be **any other digital data** including HDTV.

H) Puncture and Depuncture are operations performed by turbo decoders and therefore the rejection, in claim 14 for example, impliedly points to the rejection of claim 11(c), turbo decoder.

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7.   Park, U.S. Pat. No. 6,166,667 discloses a selection of turbo or non-turbo error correction codes based on data type or length.

8.   Langhammer et al., U.S. Pat. No. 6,400,290 disclose a normalization implementation for a logmap decoder, including turbo encoding and decoding.

9.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (703) 305-0019. The examiner can normally be reached on 10:00am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Miller can be reached on (703) 305-4795. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is (703) 305-

4750.

MICHAEL H. LEE
PRIMARY EXAMINER

Paulos Natnael
October 20, 2003